environment, specific computing hardware, choice of communication protocols, number of transmitters, and number of Push/Pull gateways used.

CLAIMS:

I claim:

1. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, said gateway working in an event driven manner controlled via an operation administration and maintenance module, said event driven gateway comprising:

a network inbound queue for the reception of instructions related to said data content transfer;

a scheduler for parsing said instructions for directives comprising:

Push and Pull transmissions, and

broadcast times and schedule related to said transmissions;

a content fetcher for the extraction of said data content based upon said directives;

a data processor for encoding said extracted data content;

an addressing module for parsing said instructions for extracting addressing instructions, and

an outbound queue for broadcast transmission of said encoded data content based upon said parsed addressing instructions and said schedule.

2. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a device profile database, said device profile database holding profiles associated with iBOC enabled consumer devices, and each of said profiles defining one or more specific data content formats for said transmission via said outbound queue to one or more clients.

3. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 2, wherein said instructions related to data content transfer further comprises a request for identifying said one or more specific data content formats associated with one or more specific clients.

4. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a Push ID/Originator ID extractor for extracting a unique ID associated with a sender of said received instructions, assigning a unique ID associated with said Push transmissions, and storing said Push ID/Originator ID in a Push recorder.

5. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 4, wherein said gateway further comprises a Push authenticator for authentication of said sender of said received instructions.

6. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 4, wherein said outbound queue further comprises a network outbound queue and a broadcast outbound queue, said network outbound queue transmitting data content to said sender of said received instructions and said broadcast outbound queue transmitting data content to an external broadcasting network.

7. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 6, wherein said broadcast network is an in-band on-channel (IBOC) network.

8. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a bandwidth module for bandwidth management, said bandwidth module maintaining queues and prioritizing flows per quality of service (QoS) traffic attributes while keeping resource starvation to a minimum.

9. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 8, wherein said queues further comprise an active queue and a passive queue, said active queue storing data content currently being transmitted and said passive queue storing pushed and pulled data content.

10. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a cache for holding said data content to be transmitted.

11. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said instructions related to said data content transfer comprise precompiled binary data for transmission.

12. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said scheduler further parses for pushed zone information defining various time zones for broadcasting said encoded data content.

13. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said instructions include a unique identifier, said identifier used in targeting said transmitted data content to a specific user agent.

14. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 13, wherein said identifier is an URI or a numeric value.

15. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said data processor further comprises a data transformer and a data encoder, said data transformer converting said extracted data content into a specific format and said data encoder encapsulating said extracted data content in a specific format.

16. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 15, wherein said encoder is TBL encoder.

17. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway communicates to external networks via any of the

following protocols: point-to-point protocol (PPP), hypertext transfer protocol (HTTP), or wireless access protocol.

18. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said transmitted data content is in one of the following formats: binary, plain text, HTML, XML, or WML.

19. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a timer for tracking a predefined timeout for which transmission of data content occurs.

20. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway is networked for synchronized scheduling with one or more similar gateways and said transmitted data propagates through said network of gateways before reaching one or more client devices.

21. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said parsed directives further include any of the following: time at which transmission is to commence, time at which transmission is to cease, or rate at which data content to be transmitted needs to be repeated.

22. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said information is extracted over a network.

23. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 22, wherein said network is any of the following: local area network, wide area network, wireless network, or Internet.

24. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said gateway further comprises a network database supplying the content fetcher with locations of remote databases from which information is to be extracted.

25. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 1, wherein said encoded data content is in a digital broadcasting format suitable for reception via a digital consumer radio receiver.

26. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, said method comprising the steps of:

a. receiving a Push request from a content provider center;

b. authenticating said content provider center as originator of said Push request;

c. parsing said Push request for push, pull, broadcast times, and addressing directives;

d. fetching data content to be pulled over a network based upon said Push and Pull directives;

e. encoding said fetched data, and

f. transmitting said encoded data to clients based upon said broadcast times and said addressing directives.

27. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said method further comprises the step of accessing a subscription profile database to identify one or more specific data content formats associated with said clients.

28. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 27, wherein said method further comprises the step of receiving a request from one or more of said clients identifying said one or more specific data content formats associated with data content transmission.

29. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said encoded data content is in a digital broadcasting format suitable for reception via a digital consumer radio receiver.

30. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said method further comprises the step of maintaining a cache for holding said encoded data content for transmission.

31. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said received Push request further comprises a unique

identifier, said identifier used in targeting encoded data to a specific user agent associated with said client.

32. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 31, wherein said identifier is an URI or a numeric value.

33. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said received Push request further comprises information defining various time of day and zones for broadcasting encoded data content.

34. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said method further comprises the step of converting said fetched data content into a specific format.

35. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 34, wherein said specific format is any of the following: plain text, binary data, HTML, WML, or XML.

36. A method for scheduling over the air transmissions via an event driven Push-Pull gateway, as per claim 26, wherein said network is any of the following: local area network (LAN), wide area network (WAN), wireless networks, HFC Network, LMDS satellite network, or the Internet.

37. A business method for generating revenue based upon scheduling and pushing requested data content via a Push-Pull gateway, said method comprising the steps of:

a. receiving a Push request from a content provider center;

b. authenticating said content provider center as originator of said Push request;

c. parsing said instructions for push, pull, broadcast times, and addressing directives;

d. identifying a bandwidth associated with transmitting said received Push request;

e. identifying transmission slots available for said identified bandwidth and costs associated with each of said identified slots;

f. transmitting to said content provider center said identified transmission slots and said associated costs;

g. receiving a choice from said content provider center regarding which of said identified slots is to be used for transmission;

h. extracting data content over a network based upon said parsed directives;

i. encoding said extracted data content;

j. transmitting said encoded data content based upon said broadcast times and said addressing instructions to one or more end devices, and

k. calculating a cost associated with said choice of transmission slot and charging said content provider center for said calculated cost.

38. A business method for generating revenue based upon scheduling and pushing requested data content via a Push-Pull gateway, as per claim 37, wherein said encoded data content is in a digital broadcasting format suitable for reception via a digital consumer radio receiver.

39. An article of manufacture comprising a computer usable medium having computer readable program code embodied therein that schedules over the air transmissions via an event driven Push-Pull gateway, said article comprising:

a. computer readable program code receiving a Push request from a content provider center;

b. computer readable program code authenticating said content provider center as originator of said Push request;

c. computer readable program code parsing said Push request for push, pull, broadcast times, and addressing directives;

d. computer readable program code fetching data content to be pulled over a network based upon said Push and Pull directives;

e. computer readable program code encoding said fetched data, and

f. computer readable program code transmitting said encoded data based upon said broadcast times and said addressing directives.

40. An article of manufacture comprising a computer usable medium having computer readable program code embodied therein that schedules over the air transmissions via an event driven Push-Pull gateway, as per claim 39, wherein said article further comprises computer readable program code for encoding data content in a digital broadcasting format suitable for reception via a digital consumer radio receiver.

41. A datacasting system for scheduling over the air transmissions of data content, said system comprising:

a content provider center linked with one or more application service providers(ASP), said ASP's sending instructions for data content transfer to said content provider center;

a Push-Pull gateway comprising:

a network inbound queue in said gateway for reception of said instructions related to said data content transfer;

a scheduler for parsing said instructions for directives comprising:

Push and Pull transmissions, and

broadcast times and schedule related to said transmissions;

a content fetcher for the extraction of said data content, over a network from one or more content providers, based upon said directives;

a data processor for encoding said extracted data content;

an addressing module for parsing said instructions for extracting addressing instructions,

an outbound queue for broadcast transmission of said encoded data content based upon said parsed addressing instructions and said schedule, and

a broadcast network transmitting said broadcast transmission from said outbound queue to one or more consumer client devices.

42. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a subscription client device profile database, said subscription client device profile database holding profiles associated with said clients, and each of said profiles defining one or more specific data content formats for said transmissions via said outbound queue to one or more consumer client devices.

43. A datacasting system for scheduling over the air transmissions of data content, as per claim 42, wherein said instructions related to data content transfer further comprise a request for identifying said one or more specific data content formats associated with one or more specific clients.

44. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a Push ID/Originator ID extractor for

extracting a unique ID associated with a sender of said received instructions, assigning a unique ID associated with said Push transmissions, and storing said Push ID/Originator ID in a Push recorder.

45. A datacasting system for scheduling over the air transmissions of data content, as per claim 44, wherein said gateway further comprises a Push authenticator for authentication of said sender of said received instructions.

46. A datacasting system for scheduling over the air transmissions of data content, as per claim 44, wherein said outbound queue further comprises a network outbound queue and a broadcast outbound queue, said network outbound queue transmitting data content to said sender of said received instructions and said broadcast outbound queue transmitting data content to an external broadcasting network.

47. A datacasting system for scheduling over the air transmissions of data content, as per claim 46, wherein said broadcast network is an in-band on-channel (IBOC) network.

48. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a bandwidth module for bandwidth management, said bandwidth module maintaining queues and prioritizing flows per quality of service (QoS) traffic attributes while keeping resource starvation to a minimum.

49. A datacasting system for scheduling over the air transmissions of data content, as per claim 48, wherein said queues further comprise an active queue and a passive queue, said

active queue storing data content currently being transmitted and said passive queue storing pushed and pulled data content.

50. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a cache for holding said data content to be transmitted.

51. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said instructions related to said data content transfer comprise precompiled binary data for transmission.

52. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said scheduler further parses for pushed geographic zone information defining various time of day of same geographic zone and different geographic zones for broadcasting said encoded data content.

53. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said instructions include a unique identifier, said identifier used in targeting said transmitted data content to a specific user agent in receiver direct device.

54. A datacasting system for scheduling over the air transmissions of data content, as per claim 53, wherein said identifier is an URI or a numeric value.

55. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said data processor further comprises a data transformer and a data

encoder, said data transformer converting said extracted data content into a specific format and said data encoder encapsulating said extracted data content in a specific format.

56. A datacasting system for scheduling over the air transmissions of data content, as per claim 55, wherein said encoder is Turbo Broadcast Layer.

57. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway communicates to external networks via any of the following protocols: point-to-point protocol (PPP), hypertext transfer protocol (HTTP), wireless access protocol, satellite networks, or wireless access protocol.

58. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said transmitted data content is in one of the following formats: binary, plain text, HTML, XML, or WML.

59. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a timer for tracking a predefined timeout for which transmission of data content occurs.

60. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway is networked for synchronized scheduling with one or more similar gateways and said transmitted data propagates through said network of gateways before reaching one or more iBOC client devices.

61. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said parsed directives further include any of the following: time at which transmission is to commence, time at which transmission is to cease, or rate at which data content to be transmitted needs to be repeated.

62. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said network for said extraction of data content is any of the following: local area network, wide area network, wireless network, HFC networks or Internet.

63. A datacasting system for scheduling over the air transmissions of data content, as per claim 41, wherein said gateway further comprises a network database supplying the content fetcher with locations of remote databases from which information is to be extracted.

64. A datacasting Push-Pull gateway for scheduling over the air transmissions of data content, as per claim 41, wherein said encoded data content is in a digital broadcasting format suitable for reception via a digital consumer radio receiver.